COST *and* MANAGEMENT

VOL. XXIII OCTOBER No. 9

PRODUCTION CONTROL FOR COST REDUCTION
by J. L. Marley, Jr. 294

As Supervisor of Production Control on the Special Service staff of Ernst & Ernst, Mr. Marley has received wide industrial experience in the development of improved production control systems.

Before joining the staff of Ernst & Ernst, Mr. Marley received experience in the development of punched card accounting systems with the International Business Machines Corporation.

DIFFERENTIAL COST ANALYSIS
by Ivan M. Farmer, B.S., M.B.A., C.A.A. 304

Ivan M. Farmer, Instructor of Accounting, School of Business, University of Kansas, holds a B.S. degree from Indiana University and an M.B.A. degree from the University of Kansas. He previously served on the staff of Frazer and Torbet, CPAs, Chicago, Illinois, and as Accountant for the National Automatic Tool Company, Richmond, Indiana.

REPORT WRITING
by L. W. Bennett, R.I.A. 311

Articles on costs, accounting and business subjects by Lawrence W. Bennett, who is a Cost Consultant, Public Accountant and Auditor in London, have appeared in Trade and Accounting publications from time to time over the past fifteen years. He is Chairman of the Research Committee of The Society of Industrial and Cost Accountants of Canada, a Registered Member and Director of the Independent Public Accountants Association of Ontario and a member of the Society for the Advancement of Management.

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SOCIETY NOTES

In This Issue

As announced last month, the practice of listing the Dominion, Provincial and Chapter officers each month has been discontinued, but this information, together with the Chapter meeting dates, is provided on a detached insert in this issue. The insert can be removed and filed for ready reference, and it is hoped that members will make use of this information when the opportunity arises to visit other chapters. Visiting members are more than welcome at all chapters. It is always a pleasant experience to meet with members in another chapter, and the introduction of an out-of-town member always creates an atmosphere of national fellowship.

Readers of Cost and Management will welcome the change in type appearing in Society Notes and the feature articles, commencing with this issue.

The Publications Committee is most anxious to provide a magazine that is worthy of the Society and will welcome comments from the members concerning the changes which have been made during September and October. Helpful suggestions and constructive criticism will contribute much in formulating plans for the future.

THE B.C. SOCIETY UNDERTAKES NEW PROJECT

A special course for Senior Members has been arranged by the B.C. Council through the University of British Columbia Extension Department. The course will be conducted by a member of the University staff and will comprise twelve or more lectures on the following subjects:

1. Basic Principles of Keynesian Economics.
2. Modern Economic Thought (including Joan Robinson and J. R. Hicks).
3. Canada's Stake in International Trade.
4. A Critique of the Canadian Banking Structure.
5. The Business Cycle (including discussion of American, British and other attempts to control).

The Society of Industrial and Cost Accountants of Canada

C. P. DUMAS, M.C.I., R.I.A.,
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ER OFFICERS AND MEETING D
1949 - 1950

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(Continued)

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7. The Canadian Transportation Problem.
8. Labour Problems.
9. The Social Credit Experiment.
10. Recent Trends in Anti-Trust Legislation.
11. A Critique of Present Personnel Administration.
12. Advanced Economic Theory.

This course will provide senior members with an opportunity to embark upon a concentrated course of study in subjects that are of timely interest and which relate to the broader aspects of business management. This is a very worthwhile project and the B.C. Council is to be commended for its efforts in providing this added service to its membership and incidentally it is a project that might well be considered by many of our Chapters.

MEMBERSHIP EXTENSION PROJECT GETS UNDER WAY

The Dominion-wide drive for new members is now under way, and quotas have been set for each Provincial Society. The objective which has been set by Charlie Warnes, Chairman of the Membership Extension Committee, is a net increase of 750 members of approximately 30% of our membership at April 30, last. When it is considered that there are 10,000 potential members for our Society in Canada, a net increase of 30% is not setting too difficult an objective.

Our Society has enjoyed a very substantial growth in recent years, which is indicated by the following membership figures over the past six years:

1944—1041	1947—2049
1945—1272	1948—2263
1946—1695	1949—2439

Rapid as our growth has been, it would still take a long time to reach our potential strength without a special effort to substantially increase our membership. More members add to the source of knowledge on which each one may draw for information, they can support an enlarged program and make possible additional services. Hence, a numerically stronger Society is of importance to all members and it is to their interest to give their individual support to this project.

New Members

CALGARY CHAPTER

T. O. Ley, Imperial Oil Ltd.
R. G. Westaway, Turner Valley, Alta.

HAMILTON CHAPTER

G. H. Wels, Sonoco Products Co. of Canada, Brantford.
R. Jaques, Canadian Industries Ltd.
R. E. Rae, Firestone Tire & Rubber Co. of Canada Ltd.
W. H. Mee, The Haliday Co. Ltd., Burlington.
G. E. Blanchard, The Steel Co. of Canada Ltd.
H. R. Latta, Procter & Gamble Co. of Canada Ltd.
R. J. Paterson, Studebaker Corp. of Canada Ltd.
A. J. Connor, The Steel Co. of Canada Ltd.
L. J. Scarrow, The Hoover Co. Ltd.
J. R. McPhee, Robinson Industries Ltd.
R. Laneuville, International Harvester Co. of Canada Ltd.
C. F. Peacock, Department of National Revenue.
R. S. Holman, The Steel Co. of Canada Ltd.
John Blake, Procter & Gamble Co. of Canada Ltd.
W. G. Balan, Studebaker Corp. of Canada Ltd.
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Mrs. Marjorie Siemens, Firth Bros. Ltd.
T. S. Baczynski, J. Cooke Ltd., Aldershot.
R. E. Beveridge, B.Sc., City Engineer's Dept., City Hall.
Miss Yvonne L. Hannam, John Kenyon Limited.
S. M. Young, Studebaker Corp. of Canada Ltd.
W. F. Starr, Firestone Tire & Rubber Co. of Canada Ltd.
C. K. Wolfe, 54 Hyde Park Avenue.
W. L. McDiarmid, The Steel Co. of Canada Ltd.
C. A. McGillivray, Oakville Wood Specialties Ltd., Oakville.
J. M. Skene, The Steel Co. of Canada Ltd.
W. K. Hoover, Robertson-Irwin, Limited.
R. E. Cutler, The Canadian Westinghouse Co. Ltd.
G. A. Gordon, International Harvester Co. of Canada Ltd.
F. L. Gravelle, Canadian Westinghouse Co. Ltd.
Kenneth Dale, Studebaker Corp. of Canada Ltd.
Miss Vera Page, Life Saver Ltd.
George Donison, The Steel Company of Canada Ltd.
R. Roper, Wood, Alexander & James Ltd.
W. R. Bielby, John Duff & Sons, Limited.
J. T. Hawthorne, Wood, Alexander & James Ltd.
J. H. Gibson, The Steel Co. of Canada Ltd.
J. D. Cook, Walter Woods Ltd.
W. T. Farrell, Frost Steel & Wire Ltd.
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G. Clohecy, Appleford Paper Products Ltd.
A. N. Hunt, Robertson-Irwin Limited.

D. Penfold, International Harvester Co. of Canada Ltd.
W. G. Tanner, Duro Aluminum Limited.
D. Stewart, Duro Metalwares Ltd.
G. J. Marshall, The Steel Co. of Canada Ltd.
J. E. Wilson, International Harvester Co. of Canada Ltd.
H. F. G. Mallory, Essex Packers Ltd.
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A. J. Lahie, Robinson Contracting Co. (Hamilton) Ltd.
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Miss Elizabeth Brown, Meakins & Sons, Limited.
V. T. Driscoll, Robinson Industries Ltd.
D. E. McCann, Appleford Paper Products Ltd.
S. J. Jaworsky, Essex Packers Ltd.

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D. Abeles, P.O. Box 83, Kingston.

KITCHENER CHAPTER

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W. H. Arnold, Silverwood Dairies Ltd., Kitchener.

LETHBRIDGE CHAPTER

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LONDON CHAPTER

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MONTREAL CHAPTER

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E. J. Vining, Armstrong Cork Canada Ltd.
Rene McIsaac, Department of National Revenue.
S. Mancini, Canadian Marconi Co. Ltd.
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M. Gagne, Dominion Containers Ltd.
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REGINA CHAPTER

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N. S. Hoyt, Dominion Government.
A. C. Kelly, Vancouver General Hospital.

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J. D. Laurie, B.C. Power Commission.

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J. M. Montgomery, Rubberset Company Limited, Gravenhurst.

Chapter Notes

FORT WILLIAM - PORT ARTHUR

Two scholarships were offered jointly by the Lakehead Technical Institute and the Chapter and were won by C. R. Caddo and H. Shaffer. Mr. Caddo will receive $50.00 for obtaining the highest standing in the Accounting I examination and Mr. Shaffer will receive a similar amount for the highest standing in Business Mathematics. Forty-four students of the local Chapter were successful in the Spring examinations, which speaks very highly for the success of the courses given for the Society at Lakehead Technical Institute.

HAMILTON CHAPTER

The first meeting of the Fall season was held at the Royal Connaught Hotel on September 22nd, 1949, with a large number of members and guests attending.

Mr. W. R. Spence, the chairman, introduced the new directors to the meeting.

The guest speaker for the evening, Mr. S. Armour, Economic advisor to the Steel Co. of Canada Ltd., was capably introduced by Mr. R. J. Menary, R.I.A.

Mr. Armour's subject, "Business Prospects for 1950", was very timely, due to recent dollar devaluation and was most enthusiastically received. The speaker summed up his remarks by pointing out four alternatives to be followed if we are to maintain or improve our present standard of living in Canada. Mr. Armour's address will likely appear in a future issue of Cost and Management.

Mr. J. N. Allan reported briefly on the Dominion annual meeting held at Banff, and introduced Mr. W. Armstrong, the new Assistant Secretary-Treasurer of the society.

CHAPTER NOTES

NIAGARA CHAPTER

On September 21 the Chapter held its first meeting of the season in the Leonard Hotel, St. Catharines. The meeting was marked by several interesting events, the first of which was the presentation of the Chapter scholarship to Herbert Pakrul for the highest marks obtained among the Chapter students in the 1949 examinations. The scholarship has the value of the tuition fee in one subject to be taken in his course. A second presentation was made in the form of a watch to Jim Shea, immediate Past Chairman, in token of appreciation for his services to the Chapter during his term of office.

There was an excellent attendance on hand to hear the extremely interesting address given by the guest speaker, G. Howard Chappell, Manager of the Cost and Payroll Department, Buffalo Forge Co., Buffalo, N.Y. The subject discussion was "The Origin and Development of Budgets for Cost Control".

PETERBOROUGH CHAPTER

The Chapter opened its activities for the season with a meeting at the Empress Hotel on September 26th. Mr. Gordon Langhorne, a member of the Chapter, outlined the accounting procedures followed by his Company, A. Wander Ltd., and discussed accounting problems peculiar to their particular type of business. One of the interesting points brought out in the discussion was the fact that all manufacturing trading and profit and loss items are percentages "adjusted turn-over". This information is used as a basis for comparison of the performance of each of the 14 plants operated by the Company.

TORONTO

On Tuesday night, October 4th, 1949, the Toronto Chapter began the new season on the right foot by having Mr. Paul Kellogg, R.I.A., President of Stevenson and Kellogg Limited, give a talk on "Basic Costs". It was a technical address given by a man with a thorough knowledge of what he was talking about, and as a result was of practical value to those in attendance.

The manner in which the address was received and the discussion provoked at the close of the address, clearly indicated how much Mr. Kellogg's visit was enjoyed.

WINDSOR CHAPTER

The first meeting of the year was held on Sept. 29 at the Norton Palmer Hotel. Chairman Frank R. Bear gave considerable emphasis to the membership drive which the Chapter is undertaking in conjunction with the dominion-wide membership extension project. Mr. C. W. Saddington, Chief Accountant of the Confederation Life Assurance Co., spoke on "Accounting Machines and Their Application".

Current Literature Digest

IMPACT OF INFLATION ON CORPORATE RESERVES

By RALPH COUGHENOUR JONES,

American Management Association, Financial Management, Series No. 93.

This article seems most timely, and the author's treatment of the subject is most comprehensive and interesting. He shows, by Bar Chart for various classes of assets and liabilities and for net worth, relative values based on:

1. Their book value, as originally recorded and since continued in the dollars of their original acquisition.
2. Their value after the dollars of original acquisition are converted to 1935-1939 purchasing levels.
3. Their value expressed, not in the dollars which were originally paid for them, nor in the converted value of such dollars, but rather in the dollars which today would be required to replace them.

The author's real premise is that some definite steps should be taken by accountants and by management to portray business results in financial statements on the basis of the current purchasing power of the dollar, rather than on the basis of the actual original dollars involved. At present reported profits are very large, and an actual climate exists for increased wage demands; for governmental remedies in the proposed or effected form of price controls undistributed profits taxes, excess profits taxes; and for large dividend payments.

It is Mr. Jones' contention that the profits are not wholly real, and that any such disbursements will injure the business in the course of time. The article describes three methods of achieving this conversion. The one suggested as the author's preference at the present time is termed the "Eclectic" method. With it, only that portion of the enterprise capital which passes through the revenue stage during the fiscal period, is re-stated in current dollar terms. This will produce an income statement

in which expense and revenue would be commensurable and real, or economic net income is shown in current dollar terms. On the balance sheet only the monetary assets and equity would be automatically stated in current dollar terms. While non-monetary assets, and the Common Stock equity would be residuals based on historical costs.

Adjustments originating from the difference in historical costs and current equivalents would be "housed" in a special undistributable surplus or Capital Adjustment account. Asset values, however, would not be marked up above original costs. The development of a conversion index is discussed in some detail.

The use of the Capital Adjustment account in which to record Inventory appreciation is viewed by the author as permissible.

Depreciation is another specific. Mr. Jones suggests that ordinary annual depreciation write-offs should be converted by the application of general indices to current dollar terms. A level depreciation rate of 5% pertaining to an asset acquired ten years ago would have to be increased materially today to give effect to current replacement costs. But the difference between the converted amount and the originally determined annual level amount would be a charge or credit to Capital Adjustment account.

SHORT CUTS IN ANALYSING FINANCIAL POLICY

By CHARLES L. BUSH,
Controller, August 1949.

The use of the comparative source and application of funds statement in analyzing financial policies is stressed, and the ease of procuring information for such statement is explained. The author says it is possible to take the annual report of practically any firm and quickly make an application of funds statement without detailed working papers. The figures are usually available from annual reports.

Based on the premise that sources of funds equal uses of funds, a creditable analysis of yearly financial policy can be made quickly and simply by taking the required figures from the annual report. His rule-of-thumb formula for the build-up

of the source and application of funds statement is—main sources—

1. Profits for the year.
2. Depreciation for the year.
3. Long-term debt increase for the year.
4. Reduced working capital during the year.
5. Large reserve credits during the year.

The principal applications—

1. Fixed assets increased during the year.
2. Other asset increases, as prepaid items, investments, etc.
3. Dividends paid during the year.
4. Increased working capital for the year.
5. Large reserve debts during the year.

Mr. Bush includes, in his article, the following chart which shows the actual source and use of funds of seven well-known corporations for 1947 (expressed in millions of dollars.)

COMPANY	A	B	C	D	E	F	G
Source of funds							
Profits	4.1	4.9	4.7	4.1	5.4	13.9	48.5
Depreciation	1.7	1.8	.7	1.4	2.6	3.2	8.1
Long Term Debts	0	0	0	2.7	0	0	0
Reduced Working Capital	1.1	4.3	0	0	5.4	5.1	36.7
Large reserve credits	0	0	0	0	0	5.2	0
Total	6.9	11.0	5.4	8.2	13.4	27.4	93.3
Use of funds							
Fixed Assets	5.7	9.1	2.8	4.4	8.3	19.3	57.4
Other assets	0	0	0	0	0	0	9.0
Dividends	1.2	1.9	.8	1.7	5.1	8.1	26.9
Increased working capital	0	0	1.8	2.1	0	0	0
Large reserve debits	0	0	0	0	0	0	0
	6.9	11.0	5.4	8.2	13.4	27.4	93.3

As examples of the use of the statements in the analysis of financial policy, the author records with respect to the above chart, the following deductions:

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4. What is the impact of inflation on profits?
5. The question of issuing different forms of financial statements for use by different groups?
6. What is the justification for relating profits to sales?
7. Questioning the value of a comparative source and application of funds statements.
8. What constitutes a fair compensation to stockholders?
9. Whether all profits should be regularly distributed as dividends, and whether companies should depend on the reinvestment of dividends in new stock for capital expansion and security?

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2. We have a business cycle. There are times when sales are large, as at present, and there are bound to be times when sales are much smaller. Therefore profit margins must be at least partly maintained on the larger sales in the period of prosperity to offset the smaller sales.

3. The percentage of profit to sales has a direct bearing upon the troublesome problem of the break-even point. As the percentage of profits to sales decline, the break-even point goes up, so that a relatively small decline in sales can wipe out the profits entirely.

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N. S. Hoyt, Dominion Government.
A. C. Kelly, Vancouver General Hospital.

VICTORIA CHAPTER

B. B. Hagar, Hagar & Swayne.
J. D. Laurie, B.C. Power Commission.

WINDSOR CHAPTER

A. H. Robb, Silverwood Dairies Ltd.
T. G. Henderson, Long Manufacturing Company Limited.

NON-RESIDENT ALBERTA SOCIETY

C. E. McAllister, Fred Mannix & Co. Ltd., Camrose, Alta.

NON-RESIDENT B.C. SOCIETY

G. D. Goodwin, British Columbia Packers Ltd., Alert Bay, B.C.
W. D. Pratt, C. Hudon Logging, Harrison Mills, B.C.

NON-RESIDENT ONTARIO SOCIETY

J. M. Montgomery, Rubberset Company Limited, Gravenhurst.

Chapter Notes

FORT WILLIAM - PORT ARTHUR

Two scholarships were offered jointly by the Lakehead Technical Institute and the Chapter and were won by C. R. Caddo and H. Shaffer. Mr. Caddo will receive $50.00 for obtaining the highest standing in the Accounting I examination and Mr. Shaffer will receive a similar amount for the highest standing in Business Mathematics. Forty-four students of the local Chapter were successful in the Spring examinations, which speaks very highly for the success of the courses given for the Society at Lakehead Technical Institute.

HAMILTON CHAPTER

The first meeting of the Fall season was held at the Royal Connaught Hotel on September 22nd, 1949, with a large number of members and guests attending.

Mr. W. R. Spence, the chairman, introduced the new directors to the meeting.

The guest speaker for the evening, Mr. S. Armour, Economic advisor to the Steel Co. of Canada Ltd., was capably introduced by Mr. R. J. Menary, R.I.A.

Mr. Armour's subject, "Business Prospects for 1950", was very timely, due to recent dollar devaluation and was most enthusiastically received. The speaker summed up his remarks by pointing out four alternatives to be followed if we are to maintain or improve our present standard of living in Canada. Mr. Armour's address will likely appear in a future issue of Cost and Management.

Mr. J. N. Allan reported briefly on the Dominion annual meeting held at Banff, and introduced Mr. W. Armstrong, the new Assistant Secretary-Treasurer of the society.

CHAPTER NOTES

NIAGARA CHAPTER

On September 21 the Chapter held its first meeting of the season in the Leonard Hotel, St. Catharines. The meeting was marked by several interesting events, the first of which was the presentation of the Chapter scholarship to Herbert Pakrul for the highest marks obtained among the Chapter students in the 1949 examinations. The scholarship has the value of the tuition fee in one subject to be taken in his course. A second presentation was made in the form of a watch to Jim Shea, immediate Past Chairman, in token of appreciation for his services to the Chapter during his term of office.

There was an excellent attendance on hand to hear the extremely interesting address given by the guest speaker, G. Howard Chappell, Manager of the Cost and Payroll Department, Buffalo Forge Co., Buffalo, N.Y. The subject discussion was "The Origin and Development of Budgets for Cost Control".

PETERBOROUGH CHAPTER

The Chapter opened its activities for the season with a meeting at the Empress Hotel on September 26th. Mr. Gordon Langhorne, a member of the Chapter, outlined the accounting procedures followed by his Company, A. Wander Ltd., and discussed accounting problems peculiar to their particular type of business. One of the interesting points brought out in the discussion was the fact that all manufacturing trading and profit and loss items are percentages "adjusted turn-over". This information is used as a basis for comparison of the performance of each of the 14 plants operated by the Company.

TORONTO

On Tuesday night, October 4th, 1949, the Toronto Chapter began the new season on the right foot by having Mr. Paul Kellogg, R.I.A., President of Stevenson and Kellogg Limited, give a talk on "Basic Costs". It was a technical address given by a man with a thorough knowledge of what he was talking about, and as a result was of practical value to those in attendance.

The manner in which the address was received and the discussion provoked at the close of the address, clearly indicated how much Mr. Kellogg's visit was enjoyed.

WINDSOR CHAPTER

The first meeting of the year was held on Sept. 29 at the Norton Palmer Hotel. Chairman Frank R. Bear gave considerable emphasis to the membership drive which the Chapter is undertaking in conjunction with the dominion-wide membership extension project. Mr. C. W. Saddington, Chief Accountant of the Confederation Life Assurance Co., spoke on "Accounting Machines and Their Application".

Current Literature Digest

IMPACT OF INFLATION ON CORPORATE RESERVES

By RALPH COUGHENOUR JONES,

American Management Association, Financial Management, Series No. 93.

This article seems most timely, and the author's treatment of the subject is most comprehensive and interesting. He shows, by Bar Chart for various classes of assets and liabilities and for net worth, relative values based on:

1. Their book value, as originally recorded and since continued in the dollars of their original acquisition.
2. Their value after the dollars of original acquisition are converted to 1935-1939 purchasing levels.
3. Their value expressed, not in the dollars which were originally paid for them, nor in the converted value of such dollars, but rather in the dollars which today would be required to replace them.

The author's real premise is that some definite steps should be taken by accountants and by management to portray business results in financial statements on the basis of the current purchasing power of the dollar, rather than on the basis of the actual original dollars involved. At present reported profits are very large, and an actual climate exists for increased wage demands; for governmental remedies in the proposed or effected form of price controls undistributed profits taxes, excess profits taxes; and for large dividend payments.

It is Mr. Jones' contention that the profits are not wholly real, and that any such disbursements will injure the business in the course of time. The article describes three methods of achieving this conversion. The one suggested as the author's preference at the present time is termed the "Eclectic" method. With it, only that portion of the enterprise capital which passes through the revenue stage during the fiscal period, is re-stated in current dollar terms. This will produce an income statement

in which expense and revenue would be commensurable and real, or economic net income is shown in current dollar terms. On the balance sheet only the monetary assets and equity would be automatically stated in current dollar terms. While non-monetary assets, and the Common Stock equity would be residuals based on historical costs.

Adjustments originating from the difference in historical costs and current equivalents would be "housed" in a special undistributable surplus or Capital Adjustment account. Asset values, however, would not be marked up above original costs. The development of a conversion index is discussed in some detail.

The use of the Capital Adjustment account in which to record Inventory appreciation is viewed by the author as permissible.

Depreciation is another specific. Mr. Jones suggests that ordinary annual depreciation write-offs should be converted by the application of general indices to current dollar terms. A level depreciation rate of 5% pertaining to an asset acquired ten years ago would have to be increased materially today to give effect to current replacement costs. But the difference between the converted amount and the originally determined annual level amount would be a charge or credit to Capital Adjustment account.

SHORT CUTS IN ANALYSING FINANCIAL POLICY

By CHARLES L. BUSH,
Controller, August 1949.

The use of the comparative source and application of funds statement in analyzing financial policies is stressed, and the ease of procuring information for such statement is explained. The author says it is possible to take the annual report of practically any firm and quickly make an application of funds statement without detailed working papers. The figures are usually available from annual reports.

Based on the premise that sources of funds equal uses of funds, a creditable analysis of yearly financial policy can be made quickly and simply by taking the required figures from the annual report. His rule-of-thumb formula for the build-up

of the source and application of funds statement is—main sources—

1. Profits for the year.
2. Depreciation for the year.
3. Long-term debt increase for the year.
4. Reduced working capital during the year.
5. Large reserve credits during the year.

The principal applications—

1. Fixed assets increased during the year.
2. Other asset increases, as prepaid items, investments, etc.
3. Dividends paid during the year.
4. Increased working capital for the year.
5. Large reserve debts during the year.

Mr. Bush includes, in his article, the following chart which shows the actual source and use of funds of seven well-known corporations for 1947 (expressed in millions of dollars.)

COMPANY	A	B	C	D	E	F	G
Source of funds							
Profits	4.1	4.9	4.7	4.1	5.4	13.9	48.5
Depreciation	1.7	1.8	.7	1.4	2.6	3.2	8.1
Long Term Debts	0	0	0	2.7	0	0	0
Reduced Working Capital	1.1	4.3	0	0	5.4	5.1	36.7
Large reserve credits	0	0	0	0	0	5.2	0
Total	6.9	11.0	5.4	8.2	13.4	27.4	93.3
Use of funds							
Fixed Assets	5.7	9.1	2.8	4.4	8.3	19.3	57.4
Other assets	0	0	0	0	0	0	9.0
Dividends	1.2	1.9	.8	1.7	5.1	8.1	26.9
Increased working capital	0	0	1.8	2.1	0	0	0
Large reserve debits	0	0	0	0	0	0	0
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Production Control for Cost Analysis

By J. L. MARLEY, Jr.

Supervisor, Production Control,
Special Service Staff, Ernst & Ernst

In approaching this problem, it is first necessary to appraise the contributing factors to increased manufacturing costs, and the author lists 12 of these factors as they affect the system of production. Having determined the causes of increased production costs, he then sets forth the major projects that offer the greatest opportunities for cost reduction. As an example of what can be done, the author describes in some detail an improved method of computing component part and raw material requirements, and he has also emphasized the part which the cost accountant can contribute toward improved production control.

The reduction and control of manufacturing costs is a challenging problem now facing manufacturing organizations. The general tenor of cost control programs is indicating more strongly that management policies of stressing high production performance to maintain high break-even points are now in the process of being modified. Present trends point toward maintaining substantial production volumes, but at reduced indirect cost. These modified policies, therefore, place greater emphasis on reduced ratios of "in process" inventories to contribute toward cost reduction. As may be expected, the part production control plays in cost reduction is inviting closer scrutiny on the part of management. The objectives of production control contributing toward cost reduction are probably three-fold:

1. The improvement of both the records and physical control of inventory, stressing reduction of floats, banks, and component part inventory quantities to curtail carrying charges and other costs incident thereto.
2. The establishment of sound, long-range production planning policies and methods by which acceptable manufacturing performances may be obtained within shortened manufacturing cycles.
3. The development of improved systems and paper work controls designed to stream-line and reduce clerical and indirect shop cost.

It is interesting to note that the American Manufacturing Association in listing the eight most pressing problems of business, includes the necessity of obtaining improved production planning and inventory control. Manufacturing organizations that have been in a good working capital position and able to maintain continuous high production standards are now experiencing difficulty in maintaining adequate production without abnormally unbalanced inventories. Efforts directed toward reducing component part inventories have resulted in either serious reductions in production, or substantial increases in indirect costs. Other organizations have increased production capacities without making commensurate improvements in record keeping methods. In still other situations, former well-established production control systems have now become ineffective due to inability to properly adapt outmoded routines to manufacturing processes established on an increased volume basis. These procedure difficulties are usually reflected in higher inventories, particularly in respect to component part "in process" items that contribute toward longer manufacturing cycles.

What is Production Control?

Cost reduction possibilities of properly developed and coordinated production control methods may be traced from a simplified description of the function. Production control may be defined as the systematic recording and maintenance of shop documents and records pertaining to past, present, and future operations of the manufacturing organization, designed to coordinate and disseminate manufacturing "know-how" for the benefit of all personnel. In most cases, general objectives are the balancing of the efforts of labor, the capacity of machine tools and plant facilities with the movement of materials as to time, place, quantities and quality. Production control incorporates planning for future operations on a long range basis, the scheduling of plant processes and facilities, origination and release of directives and the recording of actual performance for comparison with the plans.

Why is Production Control Necessary?

Operating difficulties in manufacturing organizations may be occasioned by a tendency of management to over-estimate the operating knowledge of subordinates in productive departments

and in departments responsible for production. It is not uncommon to find management assuming that the work of supervisory personnel is at higher level of efficiency and has remained so for a longer period of time than actual performance indicates. There are also tendencies to over-estimate the number of repetitive projects that first-level management groups can handle with reasonable thoroughness. In some cases the multitudinous details or degree of complexity of the manufacturing processes may be underestimated.

Management may consider production control the means by which manufacturing and operating "know-how" can be recorded and disseminated for the purposes of providing adequate co-ordination thereby eliminating confusion between departments and lost hours between worker groups. Proper production control systems augment the knowledge of subordinates and provide methods by which processes continue at reasonable levels without the intervention of supervisory personnel. Production control can provide routine patterns by which complex operations may be performed continuously. It also provides data for work simplification study.

The importance of production control may, in some cases, be minimized by management because a previously attempted program failed to produce the desired results. Such failure may have been due to an untimely attempt to adopt a particular production control routine to a changing manufacturing process. However, since manufacturing processes are not static, management should recognize the importance of continual pressure to keep production systems abreast of manufacturing developments. Periodic reviews of paper work methods are important in order to be sure their effectiveness has not been nullified by changes in other phases of the organization.

Major Factors Contributing to Increased Manufacturing Cost

Development of a production control program justifies consideration of the major contributing factors responsible for increased cost. An itemiized list of these factors may provide management with a means of periodically checking the efficiency of the production control system.

1. Failure on the part of management to restrict "rush" orders and customer production "schedule changes" for the benefit of the production planning group.

2. Failure on the part of the engineering department to provide accurate bills of material, parts, lists, material specifications, operation specifications, part drawings, etc. for the production planning group.
3. Failure on the part of management to restrict engineering changes.
4. Failure on the part of the production planning department to utilize routines by which sales forecasts or firm order projections may be accurately and quickly extended and summarized into component part and raw material requirements.
5. Inability on the part of the production planning group to prepare adequate schedules of forecasted requirements for raw materials and purchased parts.
6. Failure of the production planning group to develop accurate material control records.
7. Failure on the part of the production planning group to convert sales forecasts properly into scheduling and machine load data, and to determine probable difficulties within productive departments sufficiently early to permit corrective action.
8. Failure on the part of the production planning group to control shop order dispatching with sales order schedules on a planned manufacturing time basis.
9. Failure to provide proper routing instructions and scheduling methods for foremen so that adequate machine tool time is provided to perform the operations as planned.
10. Inability to establish physical control of inventories.
11. Failure to control tools, dies, jigs and fixtures adequately.
12. Failure to provide shop methods and procedures for the control of scrap and re-work.

Gearing the Internal Organization to a Production Control Improvement Program

Organizations recognizing the principle that the factory will not run itself will develop aggressively control measures and high standards of performance for all clerical personnel. As

production control is basically a paper work problem, all clerical operations may be analyzed in the same manner of a process engineering group. This approach justifies the acquisition of competently trained personnel to analyze existing routines and develop improved procedures and methods.

The success of a production control improvement program is more certain if all divisions of the internal organization can be made active participants. The marshalling of properly trained talent within the organization will go a long way toward the ultimate fulfillment of a planned program. Cost reductions in organizations of 500 employees or more can usually justify a procedure staff man, providing the efforts of the individual are not inadvertently directed into other duties.

The production control improvements for consideration may be approached as a series of individual projects. The "project" approach will permit the division of the total job into various segments. The activities of the staff man should provide benefits at an early date if each project is approached by first obtaining actual facts of existing routines, utilizing flow chart, and operation analysis methods to record each procedure step. In this regard, a workable approach is the preparation of flow charts for each production control function covering the flow of all shop documents with concise statements as to the individual operations performed. The flow charts provide a basis for analysis and may be easily reproduced for inclusion in procedure manuals.

After flow charts of the paper work operations have been completed, it is possible to formulate a broad program and prepare a project schedule. These data become the "spring-board" from which further analysis and discussions develop. Alternate methods should be flow charted and compared. As the program progresses it is helpful to maintain a program diary in which progress may be recorded. The development of comparative flow charts incorporating recommended procedures may be enhanced if all revised forms are filled in with sample entries demonstrating their use. All contemplated changes should be supported by "on the job" tests with actual personnel selected from the respective departments. These tests tend to prevent the design or installation of any revision without adequate exposure to the opinions of the personnel who will be responsible

for doing the work. The formulation of the final plan may be made more effective by the use of planning charts, indicating details as to equipment requirements, forms, miscellaneous supplies, etc. Planned due dates for the procedure changes may be entered on the planning schedule. As the final procedure conversions are made, the planning charts may be used as a check list to assure that all miscellaneous details are properly processed or completed. Procedures in final draft form may be written directly from the flow chart and operation analyses for the procedure manual.

What Are the Projects that Offer Greatest Opportunities for Cost Reduction?

When the internal organization has been geared to the production control improvement program, the next step is the evaluation of those projects which normally offer greatest opportunity for cost reduction. It is understandable that these projects may vary, but greatest cost reductions usually may be obtained by concentrating efforts directly toward reducing the component part inventories. The approach toward this end may be the consideration of a general reduction in the manufacturing cycle, the completion of which forces all cost elements toward faster handling. Elements to be studied may include the following.

1. Effectiveness of sales forecasting methods.
2. Accuracy and general content of engineering bills of material, operating specifications, part drawings, etc.
3. Reasons for engineering changes.
4. Improved methods for the computation of component parts and raw material requirements.
5. Improved physical controls for the stock room.
6. Improved material control records.
7. Routines to adequately schedule manufacture of component parts.
8. Improvement of clerical procedures for the writing of shop documents.
9. Scheduling methods designed to improve direct labor performances.
10. Production reporting methods to record actual performance against schedules.

The above listed projects are varied in their relations to the functions of manufacturing. In the interest of providing an example, one of the above projects (number 4) is described in more detail below:

Improving Methods of Computing Component Part and Raw Material Requirements

The importance of this phase of the paper work cycle can not be over-emphasized because of the inventory pyramiding that is a direct result of inability to make complete and accurate computations repetitively. Organizations having less than two-thousand component parts may advantageously depend upon columnar summary sheets if the range of models and interchangeable parts are reasonably restricted. The use of columnar summary sheets to determine component part requirements usually requires certain computations of parts usage per unit extended by the number of units to be manufactured. These computations are usually performed mentally and the product representing the component part requirements, posted to the columnar sheet for summary. Analysis of the work elements of operations of this type are easily performed. The simplicity of the operation may mislead management to the extent that control measures may not be incorporated into the procedure. Experimental and unannounced test checks of computations of "higher than average" posting clerks have repeatedly revealed minimum errors ranging from .2% to 3% for digits entered on either bills of material or material control records.

Greater accuracy may result if the computation of raw material and component part requirements is made simultaneously. In such cases, development of composite bills of material covering all models and component parts may permit the reduction of repetitive postings to the material control records. Many firms hesitate to consider the utilization of tabulating equipment for production control because of the inherent difficulty that would be encountered if a complete production control program were to be converted to punched cards. The procedure analyst, however, may advantageously visualize the development of a combination of methods and mechanisms, a portion of which may quite possibly be the use of tabulating equipment.

One small job order manufacturer with approximately four

hundred employees, manufacturing a reasonably complex product involving close to 2000 component parts, recognized the importance of accurate methods for computing both component part and raw material requirements. This manufacturer analyzed objectively this function as an individual project. Analysis of the engineering bills of material disclosed that tabulating cards could be punched for each component part within a finished unit. It was found that after the engineering bills of material were established all sales orders received in terms of finished units could be punched on an "order" card. This organization found that the only equipment necessary was a key punch machine at a very nominal monthly rental. This key punch was utilized for punching order cards and cards for engineering changes affecting bills of material. The material requirement procedure consisted of punching all items from the sales orders daily and accumulating these order cards until the end of the month. At this time the order cards with the engineering bill of material file in the form of tabulating cards were forwarded to a local tabulating service organization.

The organization then completed the following operations at nominal cost:

1. Sorted the order cards by model number and summarized the cards in terms of finished units.
2. Automatically selected the corresponding bill of material cards for component parts and computed the total number of component parts required.
3. Sorted computations by part number and tabulated complete material requirements in terms of component parts and sub-assemblies.
4. Summarized component parts requiring requisitioning of raw materials and by use of raw material specification factors automatically computed actual raw material requirements.
5. Sorted cards by raw material codes and summarized raw material requirements, furnishing printed lists of material requirements.

This solution eliminated the necessity of developing clerical procedures for computing material requirements, provided more accurate control of computations, and supplied requirement data

faster and more economically. It may not appear that the cost accountant contributed to the development of the above project; however, his contributions can be sizeable as outlined in the succeeding section.

What Can the Cost Accountant Contribute Toward Improved Production Control?

The active participation of the cost accountant in the production control program is necessary to assure the cementing of cost sources with end results. The recognition and recording of cost factors for periodic release must be augmented by developing routines which provide current data promptly and in terms and form that are readily usable by the production planning group. The tendency of the production planning group is to waive comparative costs in favor of operating reports which cover elements of time and quantities by manufacturing position. The introduction of data from the cost accounting department in a form readily understandable by the manufacturing group may well be reflected in increased margins of profit.

The cost accountant may recognize the primary requirements of the production planning group and where practicable, alter cost content and form accordingly. The production planning group will usually waive, within limits, summarized cost classifications in favor of the following:

1. Development of inventory classification trends and indirect material usages, preferably in graph form, currently after month-end closing for comparisons with shipments or other factors of shop activity.
2. Cost code classifications, in general terms, for entry on material control records to provide a measure of the inventory value of the item. This information tends to direct the attention of the production planning group to these items contributing the greatest percentage of the total inventory valuation.
3. Development of data by departments, preferably weekly covering direct and indirect labor hours, percentages of performance, controllable and non-controllable costs, etc.; again preferably in graph form to ascertain cost trends and unbalanced shop conditions.
4. Current data as to scrap and re-work cost by department and source.

5. Cost data for comparison of production order where practical, summarizing labor and material cost elements.

The development of cost data in graph form is usually welcomed by the production planning group because of the speed by which the information can be developed and established for discussion with foremen. The usual cost report form is often misinterpreted and comparison of cost trends is difficult to analyze objectively.

CONCLUSION

Tightening competitive markets will force return to closer control of manufacturing cost, the reduction to come, in part, from improved production planning. As competition tightens, production control will become increasingly important and justify the organization of a group to approach the problem as a series of projects, analyzing objectively each factor contributing to increased cost. Consummation of any program would justify the preparation of charts and operation analysis for each procedure. The potential improvements vary depending upon many factors within the organization and the manufacturing processes. Selection of specific fields of endeavor, however, offer attractive cost reduction possibilities. These projects may primarily be directed to reducing the manufacturing cycle to force closer production planning, reduce component part inventory valuations and shorter paper work cycles. The wide scope of this field requires active participation of the cost accountant to furnish cost tools currently in graphic form readily usable by the production planning group.

Differential Cost Analysis

By IVAN M. FARMER, B.S., M.B.A., C.A.A.

The many questions which can be answered by differential costs are presented by the author, but he emphasizes that their usefulness depends upon their reliability and the degree of accuracy used in segmenting their component parts into fixed, semi-fixed and variable costs. Various methods used in segmenting or dividing costs are briefly outlined. Examples are given to show how essential information is derived from an analysis of differential costs in answering many of the questions which arise in formulating policies and plans.

Differential cost analysis is the phase of cost accounting that may be employed effectively in formulating plans and policies for expansion in the form of new products, modernized plant and equipment, new departments, and additional territories and salesmen for the budget period or in terms of long-range planning.

Managerial decisions should be made after all the factors and conditions involved in an expansion program have been explored and analyzed. Any management planning its future output will find that it will be necessary to budget a larger or smaller total cost as it increases or decreases the budget of physical volume. The increment of total cost accompanying the addition to output is a differential cost or a difference in total costs at two rates of output.

Differential costs may be defined as the increase or decrease in total cost that results from producing and distributing additional or fewer units of a product. Since the volume of production may rise or decline from an established level, differential costs are incurred only if production is increased from an established level and are maintained only if production is not decreased from an established level. Differential costs thus are the difference between total costs and refer to future operations. Thy are not entered in general accounting records, but may be incorporated in budgets. When the budget period has been completed, the actual differential costs may be computed and compared with the differential costs estimated at the beginning of the period. The problem of the cost accountant is to relate

the anticipated costs of future increased or decreased production to present production where costs are known.

A cost system that discloses differential costs makes it easier to obtain the information necessary for the management to determine a pricing policy. The selling price of any product or order should cover at least the differential cost, which would be incurred if it were produced, plus a return to management. Data may be secured as to how cheaply goods can be sold; how much a concern can afford to cut prices in order to hold its business and what price can be quoted for a competitive bid. It is likely that selling prices will be set on a sliding scale for large and small buyers and for differences in services.

Differential costs have a part in settling other courses of business action. The sales department is interested in knowing whether a side-line product is worth carrying, or whether one or more lines of products should be dropped. To increase sales may require solicitation of business in new territories. A comparison should be made between the expected revenues and the anticipated extra costs. Securing new business may take the form of offering more services or granting guarantees.

Special situations within a plant may require the use of differential costs. The cost of replacing an old machine should be compared with the costs of production on a new machine in terms of the number of units which it will produce. A machine may be in use for regular production. An order may come in which must be filled immediately or the customer will be lost. Another machine may be retooled to do the work, but production costs are increased by the retooling. A study of the differential costs in relation to the size of the order should indicate whether or not it is worthwhile to retool the machine, complete the order, and satisfy the customer.

It may happen that the usual type of material may not be available at the time when an order is received. A substitute material, slightly higher in price, may be used. Whether to accept the order, use a different grade of material, or try to back order the article until the regular material is on hand should be decided after a study of differential costs.

The usefulness of differential costs depends upon their reliability and the degree of accuracy used in segmenting their component parts into fixed, semi-fixed, and variable costs. Fixed

costs do not vary with increases or decreases in productive activity. Semi-fixed costs vary to some extent with changes in production. They represent additional items of fixed costs arising from speeding up activity by adding additional shifts without increasing plant facilities. Variable costs increase and decrease with the rise and fall in the rates of activity. Though some variable costs vary in proportion to changes in the volume of output, others are not proportional, but show only related fluctuations.

The foregoing classifications are not perfect, because few costs remain fixed under all conditions of plant operation or in time. If segmentation or the division of costs were perfect, there would be no semi-fixed items; for if this class of cost could be sufficiently broken down, it could be divided into fixed and variable elements. Such an analysis is impractical, if not actually impossible, in many situations. For example, a company may be able to use a fixed number of factory supervisors over a range of productive levels. If output is extended beyond a certain point, a second shift is required, and the previous fixed cost of supervision immediately rises because of the necessity of the night supervisors who will continue to be required regardless of the range in output of the second shift. The policy may also be established to hire an additional typist for the sales department and to employ another accountant when the firm is operating a 90 per cent of capacity, as contrasted with an 80 per cent of capacity. Though conditions such as the ones described have created the semi-fixed category of costs, it is important that costs be segmented as finely as possible because this assists management in controlling costs of manufacturing and distribution.

There are various methods of segmenting or dividing costs. Variation in the number of shifts, the length of the working shift, the number of days of operation, the alteration of the speed of machines, and job analyses are bases of segmentation. Establishing departments and machine centers in a firm assists in segmenting the operations. The existence of a highly segmented plant makes possible the combining of fixed, semi-fixed, and variable factors in most advantageous proportions. The acceleration of production volume causes some costs to be increased and others to be lowered, and it is the combining of the

favorable and unfavorable factors of production that determines differential costs at a particular level.

Differential costs are not available for routine compilation in the same manner that cost accounting systems collect average costs. The principal use made of differential costs is in considering them as the differences or rates of change in total costs between various sets of estimates. From their very nature, therefore, statistical analyses and flexible budgetary procedures are appropriate methods in developing them.

After plans for future operations have been formulated, several complete cost estimates can be prepared, indicating what costs would be under each of the proposed budgetary plans. The cost accountant, statistician, engineer, and a representative of management should cooperate in collecting data concerning costs at the anticipated levels of output. Each item of cost must be studied to see how it varies with plant size and the volume of production, to ascertain whether it is fixed, semi-fixed, or variable, and to determine what it will be at the various levels of production. A satisfactory starting point is a chart of accounts, which gives a preliminary, orderly organization of costs. The costs should be reclassified into three main categories; fixed, semi-fixed and variable. Within this pattern, costs may also be shown by manufacturing, selling, and administrative functions. There may be a further breakdown by departments, products, salesmen, and territories, if it is so desired. Fixed assets must be surveyed and plans made for their use at various rates of activity. A study must be made of repairs and maintenance practices. Operating costs must be reviewed at the present level of production and at various projected volumes of output. Blanket overhead rates should not be used in the computations. Every item of indirect cost should be examined individually to see how it actually would be affected by each change under consideration. A detailed study must be made of all costs: material, labor, overhead, distribution, administration, and financing.

Numerous data sheets will be used in the analysis of cost, and schedules will be prepared as a recapitulation of the working papers supporting each cost item. It is often desirable to summarize the records graphically. A separate graph may be prepared for every item of cost. If the exhibits are kept in a

loose-leaf binder, any single cost which changes may be replaced without reworking the whole system. The cost will be plotted at the various volumes of activity. The points will be joined to form a curve so that satisfactory costs can be determined continuously at all levels of operation included in the flexible budgets.

The graphs are valuable aids for purposes of comparison. The schedules of differential costs themselves may be prepared for levels, say, of 70, 80, and 90 per cent of capacity. If a special situation arises within the business in which it is desired to determine what the costs would be at a particular level, such as 85 per cent, the job of obtaining the amounts from the graphs is simpler than the task of preparing a separate study. It is worthwhile, furthermore, to prepare the projected costs with actual costs, for an examination of the deviations from actual will assist in future forecasting. If actual production was at 77 per cent of capacity, the anticipated costs at this level should be compared with the actual costs. Although the schedules of differential costs do not contain figures for the volume desired, a separate schedule can readily be made at the 77 per cent level from the curves on the various graphs for each cost item.

A demonstration may clarify differential cost analysis. Suppose that a manufacturer of paint produces one grade of house paint. The list price of material required for each gallon of paint is $2.00 for the quantity to produce 70,000 gallons of paint. A trade discount of 10% is available if purchases of materials are made in quantities to produce 80,000 gallons of paint, and 15% to produce 90,000 gallons. The material cost for each of the three outputs is shown on line 1 of the schedule. Labor cost averages $0.50 per gallon of paint. (Line 2). A study of the several items of overhead and selling and administrative expenses reveals:

Fixed overhead costs are $70,000 (Line 4).

Variable overhead costs are as indicated on Line 5.

Fixed selling and administrative costs are $25,000 (Line 7).

Variable selling and administrative expenses total to the amounts inserted on Line 8.

Line 9 lists the total cost to produce and distribute the product at each level of operation.

The differential costs, found on Line 10, are computed by substracting $318,250 (Line 9, Column A) from $332,500 (Line 9, Column B) and $332,500 from $365,750 (Line 9, Column C).

The sales manager states that he can sell 70,000 gallons of paint at $4.80 a gallon; but in order to sell additional units of output, quantity discounts averaging 5% must be given at the 80,000 gallon-volume and 10% at the 90,000 gallon-volume. The total revenue realized is shown on Line 11.

Line 12 shows the increments in total revenue, which are computed by subtracting $336,000 (Line 11, Column A) from $364,800 (Line 11, Column B) and $364,800 from $388,800 (Line 11, Column C).

Total revenue continues to increase with each expansion of output, but the management of the company will decide to operate at the 80,000 gallon level and establish a selling price of approximately $4.56, the price at which 80,000 gallons may be disposed of. Increments in total revenue at the 80,000 gallon output exceed differential costs. At the 90,000 gallon level differential costs are in excess of increments in total revenue. That the 80,000 gallon rate of activity is the most profitable is indicated by the net profit figure found on Line 13.

Now assume that a foreign exporter has offered to buy 10,000 gallons at $4.00 per gallon. The unit cost of production becomes $4.063888 ($365,750 Line 9, Column C — divided by 90,000).

On first consideration the proposition might be turned down, because the selling price is less than the average total unit cost. However, to reject the offer may be a mistake. Assume that the paint sold to the foreign exporter will be under another brand label, that the foreign export business represents an entirely new and separate market, and the sales made through the new outlet will have no effect upon the selling price in the old market. Under the conditions described, what will be the effect of the offer. An analysis reveals:

Additional revenue if the offer is accepted (line 14)	$40,000
Differential costs (line 15)	33,250
Net additional revenue	$ 6,750

The company would find it advantageous to accept the offer from the foreign exporter.

The decision is predicated on the proposition that the original 80,000 gallons may still be sold at $4.56 each. It accepting the new order caused the selling price of the 90,000 gallons to drop to $4.00, the company would lose $5,750 determined in this manner:

Sales (90,000 units at $4.00) — (line 17)	$360,000
Total cost of production and distribution (line 18)	365,750
Loss (line 19)	$ 5,750

It is possible that the company may have to embark upon an advertising program in order to maintain the price at $4.56 on the product bearing its trade name. Since the increase in profit amounts to $6,750, any expenditure for sales promotion not exceeding this figure will show a gain for the company. Any expenditure in excess of $6,750 will place the company in a less desirable position than it was before.

The example that has been presented is but an illustrative hypothetical case of the use made of differential cost analysis within the sphere of costs arising from flexible budgeting. Many examples taken from your own business concerns may be used to illustrate the effectiveness of differential cost analysis.

Schedule of Estimated Costs,
Differential Costs, and Revenues for a
Paint Manufacturing Company

Line		Column A 70,000 gal.	Column B 80,000 gal.	Column C 90,000 gal.
1.	Material cost	$140,000	$144,000	$153,000
2.	Labor cost (average of 50c a gal.)	35,000	40,000	45,000
3.	Overhead costs:			
4.	Fixed	70,000	70,000	70,000
5.	Variable	36,000	39,000	50,000
6.	Selling and administrative expenses:			
7.	Fixed	25,000	25,000	25,000
8.	Variable	12,250	14,500	22,750
9.	Totals	$318,250	$332,500	$365,750

10.	Differential costs		$ 14,250	$ 33,250
11.	Total revenue	$336,000	$364,800	$388,800
12.	Increments in total revenue		$ 28,800	$ 24,000
13.	Net Profit (line 11 minus line 9)	$ 17,750	$ 32,300	$ 23,050
14.	Revenue from 10,000 gallons at $4			$ 40,000
15.	Differential costs (line 10, column C)			33,250
16.	Net additional revenue			$ 6,750
17.	Sales (90,000 units at $4)			$360,000
18.	Total cost of production and distribution (line 9, column C)			365,750
19.	Loss			$ 5,750

Report Writing

By L. W. BENNETT, R.I.A.

In his article, Mr. Bennett has drawn attention to the main essentials in a well written report, and has presented a selected and annotated bibliography which will be of great assistance to those who wish to improve their knowledge of this important subject through further study.

Any man may be justly proud of a well-written report. Here is evidence of his knowledge of the subject investigated, and, what is more important, of his ability to use this knowledge and present the facts he has gathered and the opinions drawn from these facts.

A man may be brilliant in the field of accounting, research or engineering, but if he is unable to write clearly and convincingly, unable to express his findings and suggestions in a convincing manner and unable to enthuse the reader, the hours or days spent in the study or investigation, no matter how thorough, may have been largely wasted. It is possible that many do not write understandable reports because they will not use on paper the simplicity and directness of speech. Many do not realize that report writing is a subject which can be studied and improved through practice, the same as any other subject.

The writing of reports is not a gift, but it is an art which has been rather neglected in the past. Employers can improve the report writing ability of every member of their staff, to the benefit of both employee and employer. Let it be a rule that no staff member will propose changes in methods, make suggestions

or complaints, without presenting them in writing. Training for the public accountant can start when he is a junior, by requiring that he put in writing all reports to his senior, regarding the accounts and records of the client. The written report is an important aid in clarifying ones ideas. It offers the best opportunity for the exercising of logical thinking and mental discipline.

A few essentials in a well-written report are—

Accuracy of fact, clarity of meaning and reasonable conciseness.

Each subject should be dealt with in its proper logical sequence and any schedules correctly arranged.

Be constructive, if you criticize a system or method, suggest an alternative method where possible.

Always distinguish between fact and opinion.

Make the report readable and interesting but avoid cheap journalism.

Write if possible in the language of the reader, avoid technical terms which you know would be unknown to him.

A report will usually reflect the mind and individuality of the writer and thus it is unwise to try to follow the style of another or to be dogmatic in the matter of rules. One can however learn much from reading and studying the reports of others.

The following selected and annotated bibliography may be of assistance to those who wish to improve their knowledge of this increasingly important subject, through further study.

Business Reports, by A. G. Saunders, Professor of Business English and C. R. Anderson, Associate Professor of English, University of Illinois, 468 pages, illustrated, McGraw-Hill (1). Based on an examination of thousands of reports, this book offers a single, logical, elastic plan that can be adapted to any type of report in business. This volume gives an organized plan, necessary for the beginner and helpful to the experienced business man, for the investigation of a business problem and presentation of the findings, conclusion and recommendations in a report. Each step of the plan and the methods of presentation is discussed in detail.

Accountants' Reports, by Wm. H. Bell, C.P.A., Fourth Edition, 390 pages, The Ronald Press Company, New York, N.Y. For Accountants, public and private, who want a comprehensive

treatment of the best present day methods of preparing clear, informative and accurate reports. Numerous illustrations of each type of statement occupy more than one hundred pages of this book.

Accountants' Writing, by John Mantle Clapp, 216 pages, The Ronald Press Company, New York, N.Y. Helping the accountant make clear and accurate everything he writes for the information of clients or associates. Ninety-seven pages of specimen accounting writing.

Preparation of Company Annual Reports, Research Report No. Ten, 104 pages, American Management Association, 330 West 42nd Street, New York, N.Y. This report assembles and analyzes the experience of accountants and auditors, company presidents, treasurers, public relations counsellors and other top management personnel. It includes a survey of a large number of annual reports and of the literature on the subject.

Annual Reports to Stockholders, Their Preparation and Interpretation, by N. Loyall McLaren, C.P.A., 364 pages, The Ronald Press Company, New York, N.Y. Critical analysis and guide to the preparation and interpretation of reports, accepted standards, improved procedures.

Company Annual Reports to Stockholders, Employees, and the Public, by Thomas H. Sanders, Professor of Accounting, 338 pages, 1949. Division of Research, Harvard Business School, Soldiers Field, Boston, Mass. Part I, Scope and problems of the annual report. Part II, Management, Investment Analysts and Labor Unions give their views on the contents of annual reports. Part III, Trends in accounting practices in annual reports.

The Preparation of Reports, Engineering, Scientific, Administrative, Business, by Roy P. Baker, Rensselaer Polytechnic Institute and Amonte C. Howell, University of North Carolina, 578 pages, The Ronald Press Company, New York, N.Y. Full of up-to-date actual reports with analyses that point out the vital factors in successful report writing. Charts and graphs show how to handle statistics interestingly and clearly.

Report Writing, by Gaum, Graves & Hoffman, Prentice-Hall Inc., 70 Fifth Ave., New York, N.Y. A thorough treatment of the fundamentals of planning and writing business, technical and special reports with actual examples.

Writing the Technical Report, by J. Raleigh Nelson, Pro-

fessor of English in the College of Engineering, University of Michigan, 385 pages, McGraw-Hill (1). Gives the reader a better understanding of his own mental processes and of the practical procedures involved in the preparation of a report, establishing in his mind certain conceptions of the report as a document prepared for a designated reader who needs it and will use it in a certain way.

The Preparation of Engineering Reports, by Thomas R. Agg, Dean of Engineering, Iowa State College and Walter L. Foster, Late Professor of Railway Engineering, Iowa State College, 192 pages, illustrated, McGraw-Hill (1). This book briefly presents the elements of the engineering report and discusses the form and arrangement that affords the most effective presentation of the subject matter.

A Guide to Technical Writing, by W. George Crouch, Associate Professor of English and Robert L. Zetler, Lecturer in English, both at the University of Pittsburgh, 436 pages, The Ronald Press Company, 15 East 26th Street, New York, N.Y. This text is designed for the undergraduate course in technical writing. It is a useful teaching aid for developing proficiency in technical and business communications, including letters, reports, articles and formal and informal speech.

(1) McGraw-Hill Book Co. of Canada, 12 Richmond Street East, Toronto 1, Ont. and McGraw-Hill Book Co. Inc., 330 West 42nd St., New York, N.Y.

Manual of Report Preparation, Correspondence and Technical Writing, by Frank Kerekes, Assistant Dean of Engineering and Robley Winfrey, Professor of Civil Engineering, Iowa State College, 397 looseleaf pages. Diagrams, sketches, specimen charts, graphs, letters, reports. 1948. Wm. C. Brown Company, Dubuque, Iowa, U.S.A. The authors drawing on their wide and varied experience, with a knowledge of the importance to the professional man of being able to write a well-written report, and realizing the limited training the average man gets in such work, have devoted the greater part of this book and placed the most emphasis on "preparation" and "planning", rather than only on "writing" of reports. They have been successful in their effort through their method of presentation and use of examples, and have made this a "how" book.

« STUDENT SECTION »

GENERAL ACCOUNTING

Comments by J. D. CAMPBELL, C.A., R.I.A.

ACCOUNTING I, QUESTION 2 (20 marks)

(a) A manufacturing concern acquired at a cost of $15,000 a plot of land with the buildings thereon for the erection of a new factory building. The wreckers who undertook demolition of the existing buildings paid $1,000 for the salvage privileges. The company paid the following additional mosts:

Lawyers' fees and costs re title	$ 350
Architects' and Engineering fees	2,500
Contractors' accounts for building construction	75,000

Required:

Show by means of journal entries, the method of recording these transactions and show the postings in appropriate ledger accounts.

(b) Assuming that the new factory building is to be depreciated at a rate of 2½% per annum, show the calculation of depreciation for the first year of its useful life and indicate the appropriate book-keeping entry.

(c) At the end of 10 years, the building burned down. Salvage recovery was $2,500 and $50,000 was received from the insurance company. Show the appropriate entries for the year in which the fire loss occurred. Entries for the intervening years need not be submitted.

Solution

(a) A Manufacturing Concern — General Journal

Date	Land	$15,000	
	To Bank		$15,000
	Acquisition of building site		
Date	Bank	1,000	
	To Land		1,000
	To record reduction in net cost of land from proceeds received from wreckers		
Date	Land	350	
	To Bank		350
	Cost re title added to cost of land		
Date	Buildings	77,500	
	To Bank		77,500
	Cost of buildings erected as per contractor's account		
	Architects fees	$ 2,500	
	Contractors	75,000	
		$77,500	

$2\frac{1}{2}\% \times \$77{,}500 = \$1{,}937.50$

Depreciation for 1 year at $2\frac{1}{2}\%$ per annum

(b)

Date				
	Depreciation		$1,937.50	
	To Reserve for depreciation			$1,937.50

(c) At the date of the fire (end of 10 years) the accounts would show

Land	Dr.	14,350	
Buildings	Dr.	77,500	
Reserve depreciation	Cr.		19,375.00

The entries at the date of the fire

Dr. Fire loss adjustment Acc.	$58,125.00	
Reserve depreciation buildings	19,375.00	
Buildings		77,500
To transfer net book value of buildings destroyed to fire loss adjustment account		
Dr. Bank	$52,500	
Fire loss adjustment Acc.		52,500
To credit fire loss adjustment with proceeds received		
Salvage $ 2,500		
Insurance claim 50,000		
$52,500		
Profit and loss	$5,625	
To Fire loss adjustment Acc.		$5,625
To close fire loss adjustment account to profit and loss		

Comments:

This question although relatively easy presented certain pitfalls into which a fair proportion of the students fell. The following were the most significant errors which occurred.

1. Failure to separate land and buildings when depreciation was considered.
2. Treatment of the lawyers fees re title as a cost of buildings.
3. Failure to capitalize lawyer's fees and contractors accounts.
4. Proceeds from demolition of buildings on original site credited to buildings.
5. Failure to close out fire loss account to profit and loss.
6. Minor error in calculation as misplaced decimal point, incorrect multiplication.
7. Failure to complete transactions re fire as to the closing out existing asset account and related reserve for depreciation account.

No penalty was imposed if a fire loss account was not used providing the entries which were submitted indicated that the student was aware of what he or she was doing.

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